CASE FOR HANDHELD DEVICE

BACKGROUND INFORMATION

FIELD OF THE INVENTION

[0001] The invention relates to the field of cases for small, handheld devices, such as PDAs, MP3 players and other devices. More particularly, the invention relates to a case that allows the handheld device to be connected to a synchronization or charging station without first removing it from the case.

DESCRIPTION OF THE PRIOR ART

[0002] Handheld devices are ubiquitous today. Typically, such handheld devices have a connector at one end for charging the rechargeable battery in the device. To recharge the device, it is inserted into a docking or charging station. Many types of cases for holding such handheld devices are known. The cases typically enclose all sides of the handheld device. The disadvantage of conventional cases is that the handheld device must first be removed from the case in order to insert it into the charging station.

[0003] Cases that include a means of attaching the handheld device to the case without enclosing it on all sides are also known. One type of attachment means is a strap that wraps around the enclosed handheld device securing the device to the case. The strap is typically constructed of a hook-and-loop type fastener. A disadvantage of such a strap is that it may tear loose from the case and allow slippage of the handheld device. Another type of attachment means is a self-adjusting bracket. This bracket includes a spring-biased clip that allows the bracket to expand to receive and then to retract to securely hold the handheld device. The disadvantage of this bracket is that it

includes moving parts that may wear out or break and that also increase the cost of manufacturing.

[0004] Most handheld electronic devices require docking to a charging station to recharge their batteries and to transfer data to and from the device. It is desirable not to have to remove the handheld device from its case in order to be able to dock the device with the charging station. **Motson (U.S. Patent 6,612,432 B2; 2003)** discloses a case for portable electronic devices that has a bottom flap that may be opened to allow the device to be connect to the charging station. A disadvantage of this case is that the electronic device is not securely attached to the case and can slide out of the case if the flap is open. Another disadvantage is that the keypad of the handheld device is not exposed, thereby prohibiting the use of the device while it is in the case.

[0005] **Hazzard et al. (U.S. Patent Publication US 2002/0163778 A1; 2002)** discloses a case for a PDA that includes a keyboard and pass-through I/O port that enables the PDA to remain in the case while connected to the keyboard. The disadvantage of this case is it includes a keyboard and an I/O port that is only suitable for certain types of PDAs. Another disadvantage of this case is that it does not fully encase the handheld device, thereby exposing the device to damage.

[0006] Furthermore, handheld electronic devices often use removable memory cards to expand the useable memory or storage of the devices. Users may have several removable memory cards that perform different functions. For instance, a user may use one removable memory card to store music files and another to store digital images. Users wish, of course, to have the removable memory cards readily available. In order to protect the pin connectors on the removable memory card, it should be stored in a protective case when not engaged in a handheld device. It is desirable to have a case that can securely and safely store one or more removable memory cards for quick and easy retrieval.

[0007] What is needed, therefore, is a case that securely holds a handheld device even when the case is open. What is further needed is such a case that allows operation of the handheld device while encased. What is yet further needed is such a case that allows the handheld device to connect to a charging station without removing it from the case. What is still yet further needed is such a case that safely and securely stores removable memory cards for easy retrieval.

BRIEF SUMMARY OF THE INVENTION

[0008] For the reasons cited above, it is an object of the present invention to provide a device case that securely holds a handheld device even when the device case is open. It is a further object to provide such a case that allows operation of the handheld device while it is encased. It is a yet further object to provide such a device case that allows the encased handheld device to connect to a charging station without first being removed from the device case. It is a still yet further object to provide such a device case that safely and securely stores removable memory cards for easy retrieval.

[0009] The objects of the invention are achieved by providing a case that securely encases the handheld device, yet leaves exposed a docking or charging connector or plug on a charging end of the handheld device when the device case is open. The device case according to the invention comprises a case panel that protects the front and back faces of an encased handheld device. The case panel is a simple two-fold billfold-type panel that folds over on itself to create a cavity in which to receive the handheld device. A rigid device bracket for securely holding the handheld device is attached to the case panel. The device bracket has a pair of flanges that create a groove into which the handheld device is slidable. The device case is sized for a particular handheld device, so that the handheld device forms an interference or friction fit with the device bracket. The portions of the case panel that cover the front and the back faces of the handheld device may be folded back away from the device bracket,

thereby freeing the charging plug from any encumbrances. The handheld device is now dockable at a charging station, without first having to remove it from the device case. The device case closes similar to a billfold, that is, it folds over the handheld device, lengthwise, and is secured closed by some fastening means, such as a hook-and-loop type strap, a snap closure, or some other type of fastening means.

[0010] The device case according to the invention also provides a removable memory cardholder on the inside of the case panel, providing a convenient space to store one or more conventional removable memory cards. The user simply slides the removable memory card face up into the cardholder. Not only does the removable memory cardholder provide a readily accessible storage place, it also serves to protect the pin connectors.

[0011] The device case according to the invention is suitable for use with many different types of handheld electronic devices such as PDAs, MP3 players and cell phones, *i.e.*, any handheld electronic device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The present invention is described with reference to the accompanying drawings. In the drawings, like reference numbers indicate identical or functionally similar elements. Additionally, the left-most digit(s) of a reference number identifies the drawing in which the reference number first appears.

[0013] FIG. 1 is a side view of the device case with a device bracket according to the invention.

[0014] FIG. 2 is a side view of the device case of FIG. 1, showing the device case with the case panel sides folded back exposing a handheld device held by the device bracket.

[0015] FIG. 3 is a top view of the device case of FIG. 2.

[0016] FIG. 4 is a top view of the device case without a handheld device with the case panel sides folded back.

[0017] FIG. 5 is a cross-sectional view of the PC cardholder embedded in the case panel.

DETAILED DESCRIPTION OF THE INVENTION

[0018] **FIGS. 1** and **2** show a side view of a device case **100** according to the invention in a closed and an open state, respectively. The device case **100** comprises an open-sided case panel **101**, having a device bracket **104** and a closure strap **103**. The case panel **101** is a substantially flat bendable or foldable body having a first panel **101A**, a second panel **101B** and an intermediate panel **101C**. The case panel **101** folds closed forming a cavity **106** that provides space for a handheld device **D**. The closure strap **103** is fixedly attached to the first panel **101A** and is provided with a closure means **105** that secures the first panel **101A** to the second panel **101B**. The device bracket **104** is attached to the intermediate panel **101C**. In the embodiment shown, the device bracket **104** is integrated with a device bracket strap **102** that is pivotably attached at one end to the intermediate panel **101C**, with the device bracket **104** at the other end. The device bracket **104** is shaped to receive and securely hold the handheld device **D**, which is shown in dashed lines. The typical handheld device **D** includes a charging connector or plug **P** that is used to connect the handheld device **D** to a charging or synchronization station **C**, as shown in **FIG. 2**.

[0019] **FIG. 2** illustrates the use of the device case **100** with a handheld device **D**. The handheld device **D**, shown in dotted lines, is inserted into the device bracket **104**, with the device bracket strap **102** extending from the intermediate panel **101C**, with the

first panel **101A** and the second panel **101B** folded away from the handheld device **D**, thereby exposing the charging plug **P** and allowing it to be connected to the charging or synchronization station **C**.

[0020] **FIG. 3** is a top view of the device case **100** of **FIG. 1**, showing the case panel **101** in the open position, with the handheld device **D** inserted into the device bracket **104**. The device bracket **104** is a simple bracket with two bracket flanges **104A**, **104B**. The handheld device **D** is insertable between the flanges **104A**, **104B**. Preferably, the bracket flanges **104A, 104B** provide a tight fit, so as to provide a secure hold on the handheld device **D**. The bracket flanges **104A**, **104B** are narrow, so as not to impede a view of or access to a display field **301** and a keypad field **302** of the typical handheld device **D**. Thus, the handheld device **D** may be operated while encased in the device case **100**.

[0021] **FIGS. 4** and **5** illustrate a PC cardholder **401**. **FIG. 4** is a top view of the device case **100** in the open position, showing the device bracket **104** and the removable memory cardholder **401** and **FIG. 5** is a cross-sectional view of the removable memory cardholder **401**. In the embodiment shown, the removable memory cardholder **401** comprises a base plate **402** and a frame **403**. The frame **403** is embedded in the second panel **101B** of the case panel **101** and has narrow flanges **502** that form grooves into which the conventional removable memory card is insertable. The base plate **402** is made of a smooth, flat, and rigid piece of material that will maintain the removable memory cards in a flat position and protect the connector pins from dust, lint, and other contaminants. It should be pointed out that the frame **403** and base plate **402** may be constructed of an integral piece of rigid plastic. In this case, the removable memory cardholder **401** does not need to have a separate base plate **402** because the frame **403** alone then provides the necessary rigidity to protect the removable memory cards. The removable memory cardholder **401** as shown is capable of holding two conventional removable memory cards although, depending on the size

of the device case **100**, the removable memory cardholder **401** may provide for one or more removable memory cards.

[0022] In the embodiment shown, the case panel **101** is manufactured in a leather, leather-like, or synthetic material that is durable and looks fashionable. If made with this type of material, the case panel **101** is a flexible skin **501**, comprising an outer skin **501A** and an inner skin **501B** that are stitched or glued together. A padding may be inserted between the outer and inner skins **501A, 501B** to provide greater stiffness to all or portions of the case panel **101** or to add a thickness and improve tactile appeal. The case panel **101** according to the invention is, however, not limited to a construction of leather or leather-like material. Rather, it is within the scope of the invention to provide the case panel **101** made of other materials, such as, but not limited to, a molded plastic case, or a case made of a metallic material, having a hinge at the junctions between the intermediate section **101C** and the first panel **101A**, and between the intermediate section **101C** and the second panel **101B**.

[0023] The device bracket **104** is preferably manufactured of a sturdy material such as a rigid, non-brittle plastic or a piece of formed sheet metal, although any material having the desired rigidity and elasticity to securely hold the handheld device **D** may be used. The device bracket **104** in the preferred embodiment is made of metal and, for reasons of aesthetics, is enclosed with the same material used to form the flexible skin **501** for the case panel. The material is extended beyond the end of the device bracket **104** to form the bracket strap **102**, that is then stitched, adhesively attached, or otherwise fastened to the case panel **101**. Using the material for the flexible skin **501** serves a dual purpose: it is flexible and, therefore, can move relative to the first and second panels **101A, 101**, which makes it easier to free the plug end from an encumbering encasing and to maneuver the handheld device **D** into the charging or synchronization station **C**.

[0024] The closure strap **103** may be constructed of the same leather or leather-like material used for the case panel **101**, or of other suitable material. The scope of the invention encompasses any number of types of closure straps, such as woven straps, straps made of hook-and-loop material, such as VELCRO®, or elastic straps that stretch around the case panel **101**. Other closure means may be considered, such as a zipper, a snap, or other types of clasps.

[0025] It is understood that the embodiments described herein are merely illustrative of the present invention. Variations in the construction of the device case may be contemplated by one skilled in the art without limiting the intended scope of the invention herein disclosed and as defined by the following claims.